

ABSTRACT

A hybrid blade wind turbine device formed of at least a pair of straight outer airfoil blades, and a pair of inner helical wing blades, as supported for rotation within a safety protective cage structure, which wind turbine can be mounted in the vertical, horizontal, or other aligned operational positions. The inner helical half wing blades, being preferably somewhat shorter than the length of the outer airfoil blades, act to "regularize" the swirling wind regime flowing through the hybrid wind turbine, so as to maximize the efficiency of the outer airfoil blades. The helical half wing blades can be formed of individual segmented vane segments to provide improved operational capabilities for the overall hybrid wind turbine. To best harness annualized available wind conditions, the hybrid wind turbine can be customized, through modification of the number of vane segments, the selection of the specific shape of the outer airfoil blades, and the specific operational positioning of the outer airfoil blades. Alternatively, the helical half wing blades can be formed as generally smooth-walled blades.